

**REMARKS**

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested.

Claims 1, 2, 4-8, 13-15, 17, 18 and 20-25 are pending in this application. Claims 1, 4-8, 13, 17, and 21 are amended. Claims 3, 9-12, 16 and 19 have been cancelled. Claim 25 is newly added and support for claim 25 is found at least at page 6, paragraph [0023] of the Applicants' specification.

Initially, Applicants thank Examiner Gagliardi for the personal interview granted Applicant's representative on May 26, 2006. During the personal interview, various features of the claims were discussed with respect to the cited references identified in the Office Action mailed March 14, 2006. In addition, Examiner Gagliardi identified Yu et al. (U.S. Patent No. 6,483,099, herein Yu) as relevant and requested that Applicants consider Yu when amending the claims. In accordance with Examiner Gagliardi's request, Yu has been considered in addition to the references cited in the Office Action mailed March 14, 2006, and the claimed amendments included in the previous section of this response and the following remarks are believed to patentably distinguish the claimed invention over all of these references, either alone or in any proper combination.

**Claims 21 and 24**

In the Office Action mailed March 14, 2006, claims 21 and 24 were indicated as withdrawn from consideration and rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse the withdrawal and rejection of claims 21 and 24 for the reasons detailed below.

Applicants respectfully submit that independent claim 21, which was newly added by the response submitted on January 24, 2006, included a minor error, thereby causing the

withdrawal and rejection of claims 21 and 24. Applicants respectfully note that amended claim 21 now recites an image detector for an x-ray device including a plurality of photosensors, wherein each photosensor includes “at least one electric contact arranged on a rear of the organic photosensitive layer” instead of “a plurality of electric contacts arranged on a rear of the organic photosensitive layer.” Applicants respectfully note that at least FIGS. 2 and 3 illustrate a photosensitive layer having an electric contact (7) attached to a rear surface of an organic photosensitive layer (2).

In light of the above, Applicants respectfully request that the withdraw of claims 21 and 24 and the rejection of claims 21 and 24 under 35 U.S.C. §112, first paragraph, be reconsidered and withdrawn.

#### **Claim Rejections under 35 U.S.C. §103**

Claims 1-2, 10, 12, 17-18 and 21 stand rejected under 35 U.S.C. §103(a) as unpatentable over Kyyhkynen (U.S. Patent No. 6,403,964) in view of Yamazaki et al. (U.S. Patent No. 6,747,290, herein Yamazaki). Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully note that the features of dependent claim 3 have been incorporated into independent claims 1 and 21 and the features of dependent claim 19 have been incorporated into amended independent claim 17, thereby rendering the rejections to claims 1-2, 10, 12, 17-18 and 21 moot.

Claims 3-9, 11, 13-16 and 19-20 stand rejected under 35 U.S.C. §103(a) as unpatentable over Kyyhknen and Yamazaki and further in view of Chappo et al. (U.S. Patent No. 6,510,195, herein Chappo). Applicants respectfully traverse this rejection for the reasons detailed below.

The Examiner acknowledges (at least on page 5, lines 7-8 of the Office Action) that Kyyhknen fails to disclose a “plated-through hole,” as recited in amended independent claims 1, 17 and 21. The Examiner relies on Chappo as teaching that plated-through holes are known in the art and that the arrangement in Chappo “allows for the substrate and readout electronics to be contained in the same footprint thereby allowing the detector to be tailored to any size and shape.”<sup>1</sup>

However, Applicants respectfully note that FIG. 6 and the description thereof (column 9, lines 21-30) in Chappo indicates that the electrical component 60 is connected to the through-holes “preferably using wire bonds 74.”

Therefore, Applicants respectfully submit that even if Kyyhkynen, Yamazaki and Chappo can be properly combined, which the Applicants do not admit, only Chappo discloses electronic components being attached to a substrate arranged beneath a photodiode array and in this arrangement the electronic component 60 and the contact pads of the 54 of the photosensitive elements are with connected through the bump 56, through-holes 70, “conductive layers” 72, and bonding wires 74.

Accordingly, Applicants respectfully submit that none of the cited references of Kyyhkynen, Yamazaki and Chappo disclose, teach or suggest an image detector for an x-ray device including a plurality of photo sensors each having at least one contact arranged on a rear surface of the photo sensor “wherein the at least one rear side contact of the photo sensors is directly connected to an electric component via a plated-through hole and a substrate and at least one solder bump,” as recited in amended independent claim 1. Applicants respectfully note that amended independent claims 17 and 21 include similar features and thus, are believed to be allowable over the cited references for at least the same reasons cited above with respect to amended independent claim 1. As described with respect

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<sup>1</sup> Office Action mailed March 14, 2006, page 5, lines 6-10.

to example embodiments of the present invention at least in paragraphs [0012] and [0027], the direct connection between the rear side contact and electric component via a plated-through hole in the substrate and at least one solder bump reduces the length of the analog signal propagation paths to a minimum and the use a solder bonding techniques are better suited to producing connections in high numbers and with a high integration density.

In light of the above, Applicants respectfully request that the rejection of claims 1-21 under 35 U.S.C. §103(a) be withdrawn.

Claims 22-23 stand rejected under 35 U.S.C. §103(a) as unpatentable over Kyyhknen and Yamazaki in view of Spartiotis et al. (U.S. Patent No. 6,703,617, herein Spartiotis).

Applicants respectfully traverse this rejection for the reasons detailed below.

Applicants respectfully note that dependent claims 22 and 23 depend from independent claims 1 and 17, respectively. Applicants respectively note that Spartiotis fails to cure the deficiencies of Kyyhkynen and Yamazaki with respect to amended independent claims 1 and 17.

Therefore, Applicants respectfully submit that dependent claims 22 and 23 are allowable over the cited references for at least the same reasons as discussed above with respect to amended independent claim 1.

#### **Yu Reference**

Applicants respectfully submit that Yu also fails to disclose, teach or suggest at least an image detector for an x-ray device including a plurality of photosensors each having at least one contact arranged on a rear surface of the photosensor “wherein the at least one rear side contact of the photosensors **is directly connected to an electric component via a plated-through hole and a substrate and at least one solder bump,**” as recited in amended independent claim 1 or similar features recited in independent claims 17 and 21.

**New Claim 25**

Claim 25 is newly added to this application and recites an image detector, "wherein the substrate includes an organic material with a filling of a material having a high atomic number serving as a shield against x-rays." Applicants respectfully submit that none of the cited references disclose, teach or suggest the feature recited in new dependent claim 25 and thus, respectfully submit that claim 25 is allowable based on this feature as well as the features included in independent claim 1.

**CONCLUSION**

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of the pending claims of the present application is earnestly solicited.


Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Scott A. Elchert at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By

  
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